

REMARKS/ARGUMENTS

Claims 1-35 remain in this application. Claims 16 and 29 have been amended.

Claims 16-18 and 29-31 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement.

Applicants believe the amendments to claims 16 and 29 overcome the rejection and remove any issues.

Claims 32-35 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Kyoto 5,145,507.

The Examiner points to Figure 3 and that text which describes Figure 3 as anticipating Applicants' invention, and suggests that the differences between Kyoto and Applicants' invention, i.e. gases and pressures, are method of use limitations. Applicants respectfully disagree and traverse the rejection.

To begin, Figure 3 per se provides no evidence that the doping furnace depicted is designed for a pressure substantially greater than one atmosphere, and the text which describes the furnace of Figure 3 likewise provides no additional insight. The Examiner contends that "the particular gases and pressures are method of use limitations and do not substantially impact any structural limitations of the apparatus," and assigns them no weight. However, to draw such a broad conclusion is problematic at best. Applicants believe that the limitations "a pressure chamber capable of attaining an absolute pressure substantially greater than 1.03×10^2 kPa" and "a fluid control system operable to provide an atmosphere including a chlorine containing gas in said chamber at an absolute pressure of substantially greater than 1.03×10^2 kPa" function as limitations upon the chamber and fluid control system to which they refer, and constitute a proper structural definition of the apparatus.

Assuming for the sake of argument that the foregoing limitations are functional or use limitations, such limitations are not prohibited. See *In re Benson*, 164 USPQ 22 (CCPA 1969), ("...we know of no reason why the limitation in terms of use should not be placed in the claims and given meaning in their interpretation.") See especially *In re Swinehart and Sfiligoj*, 169 USPQ 226 (CCPA 1971) ("...any concern over the use of

functional language at the so-called "point of novelty" stems largely from the fear that an applicant will attempt to distinguish over a reference disclosure by emphasizing a property or function which may not be mentioned by the reference and thereby assert that his claimed subject matter is novel. Such a concern is not only irrelevant, it is misplaced.")

In the only reference to high pressure, Kyoto presents a scenario wherein a high pressure might be employed and contrasts that with a situation wherein a pressure of one atmosphere is used. However, in doing so, Kyoto does not disclose a furnace defining a pressure chamber capable of attaining an absolute pressure substantially greater than 101.3 kPa or a fluid control system operable to provide an atmosphere including a chlorine-containing gas in said chamber at an absolute pressure of substantially greater than 101.3 kPa. For at least the reasons given above, Applicants assert that the Examiner has failed to make a prima facie case of anticipation. Applicants believe that claim 32 is therefore allowable over the prior art of record, and that claims 33-35, which depend from claim 32, are therefore also allowable.

Claims 1-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishikawa, and further in view of Kingery's "Introduction to Ceramics", pages 219-226.

The Examiner had previously rejected claim 1 under 35 USC 102(b) as being anticipated by U.S. Patent No. 6116055 (Ishikawa). Specifically, the Examiner noted that a pressure of 99 kPa, as taught by Ishikawa, was "about" 101.3 kPa (atmospheric pressure) as presented in Applicants' claim. In response, Applicants amended claim 1 to read a total pressure "substantially greater than 101.3 kPa." Applicants further argued that Ishikawa does not teach a total pressure substantially greater than 101.3 kPa, and in fact teaches away from using pressures greater than one atmosphere. In his Response to Arguments, the Examiner states that Applicants' previous argument is moot in view of the new grounds of rejection, but points to column 1, lines 58-59 of Ishikawa, noting that the referenced lines indicate "that 1 atmosphere is only a preferred embodiment. One of ordinary skill realizes that this is not limiting the invention to less than one atmosphere." The Examiner further points to column 1 lines 63-65 as indicating "...that the higher pressure is merely a question of convenience: a pressurized furnace requires the 'problem

of complex furnace structure.’ One of ordinary skill would interpret this as a teaching that one may use a higher pressure if one will accept the requirement of using a complex system.” In other words, the Examiner takes the position there is a tradeoff between higher pressure and complex furnace design, that such a tradeoff is a simple question of convenience, and that Ishikawa invites us to entertain this tradeoff.

In the instant case, the Examiner has rejected Applicants’ claim 1 as obvious over Ishikawa in view of Kingery. Having dismissed Applicants’ contention that Ishikawa does not disclose a total pressure substantially greater than 101.3 kPa and in fact teaches away from using higher pressures, the Examiner extends the argument that equations related to diffusion as provided in Kingery, and when combined with Ishikawa and the ideal gas law, would make it obvious to one skilled in the art to employ as “high a pressure as possible, so as to maximize the amount of chlorine in the preform.” Applicants respectfully disagree and traverse the rejection.

Applicants assert that the question of “teaching away” is a central issue. It is well established that a reference teaches away “...when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was taken by the applicant.” *In re Gurley*, 31 USPQ2d 1130 (CAFC1994).

Applicants believe that a careful reading of Ishikawa amply supports their contention that Ishikawa teaches away.

In column 1, lines 56-61, Ishikawa states that in the second embodiment of the invention, “...the partial pressure of the SiCl_4 gas is preferably maintained within the range of 0.03 to 1 atm., which corresponds to 3 vol.% to 100 vol.% so that a greater increase in the refractive index can be realized by SiCl_4 than by chlorine.” In reciting pressure, it is important to note that Ishikawa is referring to partial pressure, equating partial pressure to the concentration of SiCl_4 in the atmosphere, and in particular, the concentration range of SiCl_4 from 3% by volume to 100% by volume. The partial pressure range disclosed by Ishikawa conforms to the corresponding range of volume percent only if the total pressure of the system is one atmosphere. Ishikawa goes on to say that using a partial pressure of SiCl_4 less than 0.03 (3% by volume) is insufficient,

and that a pressure greater than 1 atmosphere “entails a problem of complex furnace structure.” (column 1 lines 61-65)

From the foregoing embodiments it becomes clear Ishikawa teaches the partial pressure of SiCl_4 , not the total pressure of the system, as a means of controlling the doping of chlorine in the glass and therefore the index of refraction of the glass.

Returning to Ishikawa’s statement that a pressure of SiCl_4 greater than one atmosphere entails a problem of complex furnace design, the statement must be viewed within the context of what Ishikawa teaches as a whole. See *Lindemann Maschinenfabrik GMBH v. American Hoist and Derrick Company et al.* 221 USPQ 485, 488 (CAFC 1984), stating that, as to obviousness, “...the question is whether there is something in the prior art as a whole to suggest the desirability, and thus the obviousness, of making the combination.” Ishikawa not only does not provide evidence that a total pressure substantially greater than one atmosphere will be effective, but discourages the use of such pressure, thereby teaching away. “There is no suggestion to combine, however, if a reference teaches away from its combination with another source.” *Tec Air Inc. v. Denso Manufacturing Michigan Inc.*, 52 USPQ2d 1294 (CAFC 1999).

Finally, Ishikawa never undertook to act on his statement regarding pressure in excess of one atmosphere. Ishikawa merely “said” his invention might be applied to doping at pressures greater than one atmosphere, but provided no examples or suggestion that he ever “did” so apply his invention. Hence, this statement must be viewed as merely speculative in nature. *In re Oelrich*, 198 U.S.P.Q. 210, 214 (CCPA. 1978), (“In determining how the [cited] disclosure was interpreted by those skilled in the art, we are more impressed by what those skilled did than by what they said.”)

The Examiner contends that the use of a pressurized furnace is a simple tradeoff with complex furnace design, arguing that such a choice is one of convenience. However, assuming arguendo that such a tradeoff exists, that existence does not rise to the level of obviousness. See *In re Dance*, 48 USPQ2d 1635, 1639 (CAFC 1994) (“...we do not endorse the Board’s reliance on a ‘trade-off’ as a criterion of obviousness”). Moreover, Ishikawa does not merely state that a complex furnace design is required, but qualifies that statement by pointing out such use presents a problem. Ishikawa is silent as to what that problem might be, and is equally silent on how one might overcome that

problem, let alone enabling one to practice SiCl_4 doping at total pressures substantially greater than 101.3 kPa. Again, even assuming a total pressure substantially greater than one atmosphere might be employed, Ishikawa does not suggest that such a pressure would be effective to increase the refractive index of the glass beyond that which is possible with total pressure at atmospheric pressure or less, further robbing one skilled in the art of any motivation for proceeding in that direction. Indeed, as discussed supra, Ishikawa reinforces Applicants' assertion that the reference teaches away from using a total pressure substantially greater than 1 atmosphere by pointing out the advantages of employing low to moderate dopant concentrations of between 3% and 60% by volume (i.e. partial pressures of between 0.03 to 0.6).

The Examiner next points to Kingery and Ficks law, and invokes the ideal gas law, as rendering it obvious to use as "...high a pressure as possible so as to maximize the amount of chlorine in the preform." The Examiner notes that one of ordinary skill in the art is familiar with such laws. Certainly, the most obvious observation is that Ishikawa would undoubtedly have been aware of Fick's law and the other equations and laws cited by the Examiner, and yet armed with the knowledge of his own invention, the path Ishikawa chose was not one which included a total pressure substantially greater than one atmosphere, suggesting that knowledge of Fick's and other laws was not sufficient motivation per se.

In placing Ishikawa and Kingery in combination, and along with the ideal gas law, the Examiner is indulging in impermissible hindsight. He begins with Applicants' disclosure as a blueprint, and then seeks references which, when assembled, yields Applicants' invention. Neither Ishikawa nor Kingery suggests that an increase in total pressure will be effective in increasing the amount of chlorine contained within the glass. As discussed supra, Ishikawa specifically points away from extending the pressure substantially above one atmosphere. Kingery is silent on the subject, and the general laws of nature cited by the Examiner are simply that – general laws of nature and therefore neutral as to how they should be applied. As the Supreme Court has noted, "...all inventions can be reduced to underlying principles of nature which, once known, make their implementation obvious", *Diamond, Commissioner of Patents and Trademarks v. Diehr and Lutton* (209 USPQ 1 (SC 1981), footnote 12.) By the same

token, knowledge of those laws does not presage their application. The Examiner argues that it would have been obvious to apply those laws in this instance, but provides no specific evidence for why one would seek to modify Ishikawa beyond broad, conclusory statements. A showing of a suggestion to combine must be "...clear and particular", *In re Dembiczak* 50 USPQ 2d 1614, 1618. *Ecolochem Inc. v. Southern California Edison*, 56 USPQ2d 1065 (CAFC 2000) in particular points out the need to rigorously avoid hindsight in showing a suggestion to combine references. In rebutting the District court's hindsight reconstruction, the Circuit court wrote,

The district court seems to find that the Martinola reference implicitly suggests the combination of the two elements, but discounts "[t]he fact that Martinola did not make Ecolochem's invention, and instead focused on the hydrogen-palladium method of deoxygenation [a]s not relevant.

The circuit court went on to say,

The district court clearly erred in this regard. This fact is completely relevant to the obviousness analysis, since Martinola actually teaches away from combining at least one of the Martinola articles with the Houghton process to achieve Ecolochem's claimed process. While the Martinola reference describes a hydrogen and Lewatit-based deoxygenation process and mentions deoxygenation by carbon catalysis of a hydrazine/oxygen reaction, it does so only for comparative purposes. The Martinola reference actually unfavorably compares the hydrazine/carbon process, saying that it "releases salts into the demineralized water" and that the hydrogen-based process is energy saving and significantly less expensive.

Kingery and the ideal gas law may provide a starting point from which to embark on a high pressure doping process and such may represent an invitation to try. However, "...obvious to try" is not the standard" in assessing obviousness. *Id.*

However, even assuming that Ishikawa provides a suggestion to use high pressure doping, Ishikawa fails to provide the necessary prescription for how such doping may be accomplished, either with regard to method or apparatus, and is therefore non-enabling. “In order to render a claimed apparatus or method obvious, the prior art must enable one skilled in the art to make and use the apparatus or method.” *Beakman Instruments Inc. v. LKB Produkter AB*, 13 USPQ 2d 1301. Kingery does not cure this deficiency.

For at least the reasons given above, Applicants assert that the Examiner has failed to make a prima facie case of obviousness, that claim 1 is allowable over the prior art of record, and that claims 2-18, which depend from claim 1, are therefore also allowable.

Regarding claim 19, Applicants contend that claim 19 is non-obvious over the prior art of record for at least the reasons given above. Ishikawa, inter alia, discourages the use of a high pressure chlorine-containing atmosphere, provides no suggestion that high pressure should be employed or that high pressure is advantageous. Ishikawa in fact teaches away from the use of high pressure by asserting that a high pressure doping furnace presents a problem inherent in its design. Ishikawa provides no guidance on how such a problem might be overcome, therefore failing to enable such a method. Applicants believe that claim 19 is allowable over the prior art of record, and that claims 20-31, which depend from claim 19, are therefore also allowable.

Conclusion

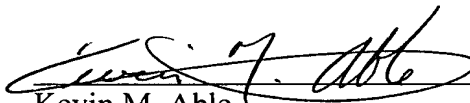
Based upon the above amendments, remarks, and papers of records, applicants believe the pending claims of the above-captioned application are in allowable form and patentable over the prior art of record. Applicants respectfully request that a timely Notice of Allowance be issued in this case.

Applicants believe that no extension of time is necessary to make this Reply timely. Should applicants be in error, applicants respectfully request that the Office grant such time extension pursuant to 37 C.F.R. § 1.136(a) as necessary to make this Reply timely, and hereby authorizes the Office to charge any necessary fee or surcharge with

respect to said time extension to the deposit account of the undersigned firm of attorneys,
Deposit Account 03-3325.

Please direct any questions or comments to Kevin M. Able at 607-974-2637.

Respectfully submitted,



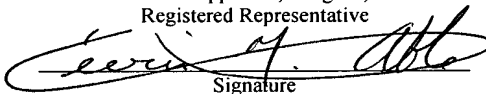
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